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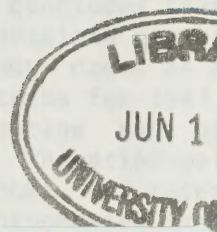
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NOTES ON CORPORATE CONCENTRATION  
AND CANADA'S INCOME TAX

by

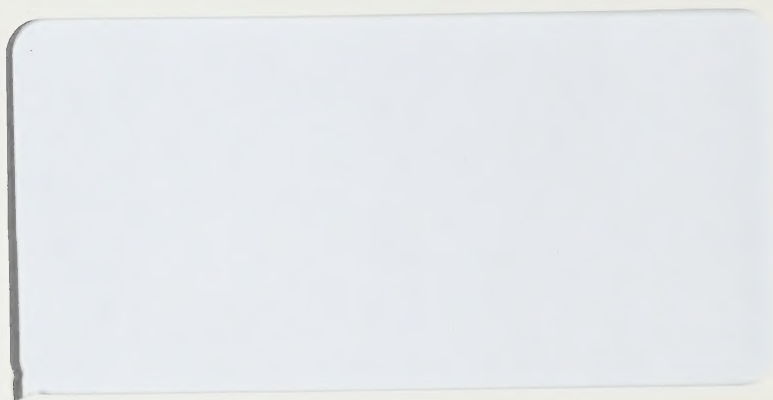
Michael C. Wolfson

No. 8



Statistics Canada  
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# Research Paper Series



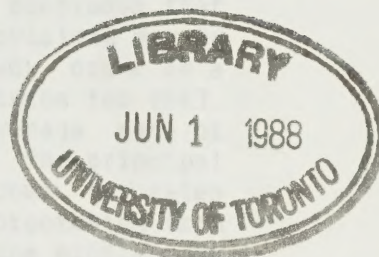
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"The law in its majestic equality forbids the rich as well as the poor alike to sleep under bridges, to beg in the streets, and to steal bread."

Anatole France via Gordon Bale (1981)

Social and Economic Studies Division  
Statistics Canada

October 1987

The author accepts full responsibility for any errors or omissions, and for all views expressed herein. The analysis should not be taken as necessarily representing the views of the Government. It is part of a larger analysis of the distributional impact on firms of Canada's corporate income tax/transfer system.

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## ABSTRACT

### Notes on Corporate Concentration and Canada's Income Tax

This study explores the relationship between the corporate income tax and tendencies toward corporate concentration. The study is in two main parts. The first considers tax provisions relating directly to mergers and takeovers such as interest deductibility and capital gains rollovers. The discussion, of necessity, relies only on anecdotal evidence and concludes that the popular concerns about the bias of these provisions may be overstated. The second and larger part of the study draws on a detailed sample of 20,000 corporate income tax returns for 1983. This empirical analysis looks at the effective average rate of taxes paid, net of government transfers received. The principal finding is that effective federal corporate income tax rates first increase in relation to the size of the corporation from 9.7% in the smallest size range to 17.1% in the middle size ranges (\$10 to 25 million in assets net of intercorporate holdings), and then decline. Corporations with over \$100 million in net assets had a lower average tax rate at 9.6% than those in the smallest size range. The overall average rate was 11.5% for federal, and 16.8% for federal plus provincial income taxes.

Key Words: corporate concentration, taxation, tax expenditures, income tax.





# NOTES ON CORPORATE CONCENTRATION AND CANADA'S INCOME TAX

by

Michael C. Wolfson

## Introduction

The Report of the Royal Commission on Corporate Concentration (1976) accepted the conclusion of the background study by Stikeman, Elliot, Tamaki Mercier and Robb: "In summary, the (Income Tax) Act does not appear to contain any fundamental bias which is either in favour of or detrimental to corporate concentration" (1976, page 39). On the other hand, recent newspaper columns by Parizeau (1987) and Blenkarn (1987) have called for major changes to the corporate income tax system precisely in order to remove what they see as a bias toward corporate concentration.

In these notes, we examine the question of tax system bias in two main stages. First, several corporate income tax provisions that are relevant to takeovers and mergers are examined. These provisions tend attract attention because takeovers are themselves much more likely to arouse journalistic attention and public interest. This part of the analysis is necessarily anecdotal and impressionistic because of the paucity of data, and the technical complexities of both the provisions themselves and the way transactions are typically structured to use these provisions.

While corporate takeovers may generate headlines, one firm growing more quickly than another rarely occasions much public interest. Yet if larger firms tend systematically to have relatively higher after-tax profits, whether to plough back into existing operations or to grow via corporate acquisitions, then this would also appear to constitute a source of bias toward concentration. On this question of the impact of the tax system on after-tax profitability, there is a considerable amount of data; and these notes provide a more detailed empirical assessment, based on a sample of corporate income tax returns. These data are well suited to determining the effective rates of tax actually paid by firms, though they are not able to shed any light on the taxation aspects of corporate takeovers and other forms of reorganizations. The main empirical part of the analysis examines the relationship between firm size, effective tax rates, and the utilization of various corporate income tax provisions.



The basic conclusions of the analysis are in two parts. First, it is argued that the impacts of the tax provisions relating specifically to mergers and takeovers on corporate concentration may be overstated, particularly in light of the greater journalistic attention they have recently received. Second, however, the empirical analysis of effective tax rates seems to indicate a more fundamental and pervasive bias toward concentration. Put simply, larger firms systematically tend to pay less tax.

### Preliminaries

In any assessment of the extent of bias in the income tax system with respect to corporate concentration, it is desirable to be precise about the concepts being used. Unfortunately, this is difficult. For example, we refer to corporate concentration, but in fact in common parlance the objects of interest are not legal corporations but groups of corporations linked by common ownership and control, often referred to as enterprises. (We shall use the generic word "firm" where it is not likely to be ambiguous.)

Concentration often is measured by the amount of a given market accounted for by the  $k$  largest firms. But this begs the questions of how to measure the size of a market and the sizes of the firms in that market (typical measures are the shares of total sales or assets accounted for by the 4 or 8 largest firms), how to define a firm, and how to define a market. In this analysis, the focus will be on whether or not there are biases in the corporate income tax system that allow large firms to grow relatively more quickly, so there is no need for a precise definition of market. The analysis might in fact be considered to be applicable mainly to the question of aggregate concentration. Also, the quantitative analysis uses corporate data, so there is little scope for exploring alternative definitions of the "firm".

Another conceptual issue concerns the precise meaning of an assertion that the tax system is biased toward corporate concentration. The notion of bias only makes sense when the current tax system is compared to some other hypothetical tax system. One approach could be to compare the current corporate income tax system with an hypothetical tax system that is identical in all respects to the current tax system except that the provision in question is absent. An alternative is to compare the current tax system to a well-defined benchmark tax structure which is neutral with respect to concentration.



The former approach is easier to understand, but is unsatisfying because of its naivete - it is either unlikely that the corporate income tax would ever be amended in such a simplistic way, or such simple amendment would fail to recognize some of the more basic concepts built into the corporate income tax system. The latter approach is more probing and rigorous. Yet there is ongoing dispute even about what it is that the corporate income tax taxes (see Stiglitz (1976), Boadway, Bruce and Mintz (1981)), so that the construction of a "neutral" tax system is a difficult task. In the first part of the analysis, both of these approaches will be considered, while in the second empirical part of the analysis the principal focus will be on comparisons with a neutral "benchmark" corporate income tax structure.

### Mergers and Takeovers

The tax provision that tends to receive the most attention as constituting a bias toward external growth, i.e. growth by acquisition of another firm, is the interest deduction on funds borrowed to buy shares. For example Bale (1981) and Blenkarn (1987) both single this provision out. Two other provisions that have been noted in the popular press are the tax-free flow of intercorporate dividends, and the continuation of tax losses through a takeover if certain conditions are met. A fourth provision that tends to receive relatively little popular attention is the system of capital gains rollovers allowed in takeover situations, provided they are appropriately structured. In this section, we examine these provisions to assess the extent to which they can be said to be biased toward concentration.

In the case of interest deductibility, the main concern is that the costs of borrowing the funds required to make a "paper" as opposed a real physical investment are a deductible expense for tax purposes, while the resultant flow of income from this purchase of shares takes the form of non-taxable intercorporate dividends. This, however, is a simplistic view. When one company wants to buy the assets of another, there are several strategies and hence a variety of tax planning trade-offs. The purchaser can buy the physical assets of the target company, or its shares. In the case of a share purchase, there can be either a cash purchase or an exchange of shares.

If the purchaser uses cash, which in turn has been raised by borrowing, the purchaser benefits by the possibility of paying those interest costs with



50 cent dollars. This is because interest is, for tax purposes, a deductible expense against a combined federal and provincial corporate income tax rate of about 50%. (This will be somewhat lower if the impending corporate income tax reform proposals are implemented.) However, the vendor will typically realize a capital gain in a cash sale, and in order to protect the after-tax value of the proceeds of the sale of the company, will probably ask a higher price. Furthermore, if the purchaser is in a non-taxable position already, or has a relatively small amount of taxable income, little if any of the interest expense would prove to be useful as a deduction for tax purposes. Thus, most or all of the interest could have an after-tax cost of 100 cents on the dollar.

More importantly, even if a firm is in a position to use interest expenses as a tax deduction, the firm does not need to engage in a takeover to increase its debt-equity ratio; it can borrow to buy more assets or to buy back some of its own shares. It is also not clear why we should be any more offended at a firm borrowing money to buy a stream of tax-free intercorporate dividends than at a firm borrowing money to buy physical assets eligible for accelerated write-offs. At least in principle, the intercorporate dividends reflect corporate income that has already borne tax. In contrast, the asset purchase directly involves a mismatch in the timing of the expense incurred to earn income and the resulting income.

Turning the question around, we can ask what the impact would be if the interest deductibility provision were restricted in the case of share purchases. As noted when the restriction was removed in the 1972 tax reform, it would place domestic firms at a comparative disadvantage relative to U.S. firms in financing a takeover, since interest is deductible in these situations under the U.S. tax code. It would also have a stronger adverse impact on non-friendly takeovers. The reason is that in friendly takeovers, the deal could be structured as a sale of assets rather than as a sale of shares, in which case interest on money borrowed would be deductible. Also, non-friendly takeovers more often involve a cash bid. More generally, removal of interest deductibility would have a somewhat haphazard impact, depending not only on whether or not the takeover was friendly, but also on whether the parties to the transaction would have found it beneficial to borrow to finance the transaction.

(We shall not comment at length on any moves to tax intercorporate dividends as a means to curtail the incentive for corporate takeovers. If this were done generally, it would clearly constitute double taxation, and would be

akin to hitting the proverbial fly with a sledgehammer. Note that the new taxes on intercorporate dividends proposed by the Minister of Finance on June 18, 1987 are selective and have limited application.)

One alternative is for the purchaser and vendor to arrange the sale via an exchange of shares. Typically, such share for share exchanges are structured to avoid triggering any realization of capital gains. In this latter case, the vendor can ask a lower price (in terms of the purchaser's shares) because he will not have to pay any tax on the capital gains - they are deferred until the time he chooses to sell the shares he has received from the purchaser. (In fact, typical transactions are often much more complex than this and involve "funny" kinds of shares like retractable preferred shares which are much more like GIC's.)

Thus, it is not at all clear that the preferred route for a corporate takeover is to borrow money for a cash transaction. Unfortunately, there exist virtually no datasets that would allow a careful analysis of the relative quantitative importance of interest deductibility and capital gains rollovers in Canada. Instead, we shall appeal to some anecdotal evidence.

In the federal budget of May 6, 1974, section 85.1 allowing share for share exchanges was introduced, along with the enrichment of a number of other capital gains rollovers for "corporate reorganizations". The only mention of these proposals was given in the technical part of the document on "Supplementary Information"; in the summary table on the revenue impacts of the budget's proposals, no mention was made of these enhanced rollovers. In the budget of March 31, 1977, these rollover provisions were again enriched, and again the only mention was in the detailed technical language of the Ways and Means motions of the Supplementary Budget Papers. There was no mention of these changes in the Budget Speech, and they were not mentioned in any of the tables showing the revenue impact of all the budget's proposals.

Any reader would thus appear justified in concluding that the introduction and enhancement of capital gains rollover provisions related to corporate reorganizations were of a minor technical nature and had no revenue consequences. As a result, if the Minister of Finance were to propose subsequently to tighten these provisions, this should occasion no comment. However, when just such tightening was proposed in the November 11, 1981 budget, there was a very large outcry. The first Saturday after the budget, Bill Richards of Dome Petroleum flew to Ottawa to say essentially that the proposed restriction on



the capital gains rollovers (as well as restrictions on the use of term preferred shares) would prevent Dome from proceeding with the takeover of Hudson Bay Oil and Gas. Comments at the time suggested that the tax implications would be in nine figures. The tightening of the capital gains rollovers was one of the very first budget proposals upon which Mr. MacEachen retreated, as indicated in a press release dated November 18, 1981.

While it is not clear what reaction would greet a budgetary proposal to remove interest deductibility on funds borrowed to buy shares in a takeover situation, it would clearly have to be fairly substantial to equal the outcry caused by the prospective tightening of the capital gains rollovers. This in turn suggests that the role of interest deductibility in facilitating corporate mergers and takeovers may be over-stated relative to other provisions. (It might also be noted that Auerbach and Reishus (1986), in a study of U.S. mergers during the period 1968 to 1983, did not find "that significant changes in leverage are associated with mergers and acquisitions, even when the acquired companies are large relative to those making the acquisition.")

Another set of provisions governs the ability to carry tax losses through a merger or takeover. For example, in the popular commentary on the recently proposed takeover of Dome Petroleum, it has been noted that there are \$2.5 billion in "tax loss credits to lure a buyer" (Globe and Mail, April 14, 1987). Tax losses arise both when a firm has actual economic losses, and when a firm is profitable. Particularly in the latter case, the tax losses typically reflect the use of various accelerated write-offs and incentive provisions. These tax losses can be carried forward by a corporation and used up to seven years later to offset subsequent years' taxable income. In principle, a firm could become a takeover target if it has substantial tax losses that it is unlikely to be able to use itself. There is a restriction in the tax system that allows the losses to be used after a takeover only against income earned in the same line of business. Nevertheless, a firm in the same industry that is taxable could well find it attractive to merge with another with a bank of otherwise unusable tax losses solely for this reason.

The anecdotal evidence mentioned above suggests that these provisions in the income tax system may provide an inducement to corporate takeovers and mergers. By this, we mean that the removal of any one of the provisions for interest deductibility for share purchases, the tax-free flow of intercorporate dividends, capital gains rollovers in corporate reorganizations, and the

carryforward of tax losses through a change in control would probably discourage at least some takeovers.

However, there are several reasons for caution in concluding that this in turn represents a fundamental tax system bias toward corporate concentration. The first point is that the inducements should more properly be measured relative to some benchmark tax structure that is neutral with respect to takeovers and mergers. What might such a tax structure look like? To give one example of the conceptual issues this question raises, consider capital gains. Since gains are taxed on a realization basis, if a realization were triggered on the change in control of a company (which is one of the key tests in many other jurisdictions' tax codes), this would result in the well known lock-in effect of the taxation of realized capital gains - the owners would be less likely to sell as compared to a situation in which there were no taxation of capital gains. This lock-in has been ameliorated by providing generous rollover provisions, but this is tantamount to the abolition of taxation of capital gains if ways can always be found to defer realization indefinitely. Alternatively, as proposed by the Carter Royal Commission (1966), capital gains on company shares could be essentially taxed as they accrue via full integration of the corporate and personal income taxes. Something like this which is close to full accrual taxation of capital gains would remove the lock-in effect. Compared to these polar opposite benchmarks - either full taxation of capital gains on an accrual basis or the complete exclusion of capital gains from taxable income - the existing rollover provisions would not appear biased toward takeovers.

Similarly, the full deductibility of interest costs to buy a stream of tax-free intercorporate dividends clearly represents a bias in comparison to the abolition of this specific provision. But interest deductibility as currently allowed raises broader questions. How biased would it appear when compared to a tax system in which interest deductibility was more generally limited not only as it now is to investments made for business purposes, but was also limited to the amounts of taxable income which those business activities actually generated year by year. In this case, the bias would not appear so great. For example, the tax deductibility of interest costs incurred to buy a physical asset eligible for accelerated depreciation is equivalent to an immediate tax deduction in respect to a deferred stream of taxable income. The deductibility of interest to buy a stream of non-taxable intercorporate dividends does not appear to be as great a tax preference in this light.

Finally, the takeover motive related to tax losses would be substantially reduced if there were provisions to allow the sale of tax losses by themselves. This example of an alternative benchmark illustrates the fundamental issue of the treatment of losses in the tax system, which is discussed more fully below.

These points suggest that the tax system bias toward mergers and takeovers depends critically on what benchmark tax system is taken as a point of reference. If we take as the benchmark tax system one with full accrual-based taxation of capital gains, a full matching of interest expense deductions with the taxable income streams they are used to purchase, and fully symmetric treatment of losses for tax purposes, then none of the three groups of measures just discussed - capital gains rollovers on corporate reorganizations, interest deductibility on financing of purchases of shares, and tax loss flow throughs on change of control - would represent a very strong tax system bias toward mergers and takeovers.

Notwithstanding this argument, a second broad reason for caution in interpreting the anecdotal evidence above as a bias toward concentration is that small as well as large firms may engage in takeovers and mergers. A bias toward concentration would only arise if any tax system bias toward mergers and takeovers was relatively stronger among already large firms. One might speculate that larger firms have a greater capacity to borrow and hence to benefit from interest deductibility, that larger firms are more likely to be able to tender their own shares in a takeover bid using a share for share exchange since the vendor will likely view those shares as more secure or liquid, and that larger firms are more likely to be able to benefit from an ability to utilize tax losses in an acquired company if those tax loss accounts are allowed to continue through a change in control. However, except for the last point which is discussed later, we are not aware of any strong evidence to support these speculations.

### The Tax System and Profitability

The ability of a firm to grow depends critically on its profitability. This is true whether the firm grows externally by purchasing other companies, or grows internally by purchasing productive assets; it is also true whether the firm finances its investments out of retained earnings, share issues, or new borrowing.



In the rest of these notes, we focus on the question of whether the income tax acts in any systematic way to bias after-tax profitability in relation to firm size. To the extent that it does, it results in a potentially more pervasive and fundamental bias toward concentration than the provisions just discussed relating to mergers and takeovers. The key indicator of any such tax system bias is effective corporate income tax rates as a function of firm size. In turn, any differences between effective and statutory tax rates are largely attributable to tax expenditures - tax provisions whose purpose is similar to direct spending programs rather than the simple raising of revenue.

#### Variation in Effective Tax Rates (ETR's) by Firm Size

The basic accounting framework and definitions of benchmark tax and income are developed in the Annex. In this section, the resulting effective tax rates (ETR's) are shown for firms within the corporate universe arrayed by size. The basic results are shown in Table 1 for 1983. The most striking observation is the "inverted U" pattern of ETRs by asset size. The overall average ETR of net federal income taxes less transfers received (top row) was 11.5%; but this average covered average ETRs ranging from 9.7% in the smallest asset size group up to 17.1% in the \$10 to 25 million asset size group and then back down to 9.6% in the top \$100+ million asset size group. This latter group of very large firms accounted for 0.2% of all firms, but 49.7% of all positive benchmark income and 64.5% of all assets. (It may be noted that similar but less detailed conclusions regarding declining ETRs in relation to firm size were presented in Kierans (1972).)

This pattern of ETRs suggests that above a certain size threshold (in the range of \$10 to 25 million in total assets), the corporate income tax system is systematically (albeit anonymously - recall Anatole France) biased toward concentration. For some complex of reasons, the largest firms face declining ETRs, and hence higher after-tax profitability than they would under a neutral benchmark tax structure.

It should be noted that total assets as used in virtually all publications based on these data are subject to some double counting due to intercorporate holdings. However, in this analysis, an approximation to total assets net of intercorporate holdings has been used.

TABLE 1: Various Effective Tax Rates and Information Items by Net Asset Size, 1983

Variable	Net Asset** Size Range (\$ millions)								All Sizes
	0-.5	.5-1	1-2	2-5	5-10	10-25	25-100	>100	
<u>Effective Tax Rates</u>									
Federal Income Tax less Transfers*	9.7	11.1	11.9	16.5	15.3	17.1	15.4	9.6	11.5
Provincial Income Taxes	3.2	3.8	4.5	5.9	6.6	6.8	6.4	5.5	5.3
Sub-Total	12.9	14.9	16.4	22.4	21.9	23.9	21.8	15.1	16.8
Federal and Provincial Resource Taxes	0.4	-	0.4	-	2.8	2.9	4.1	24.8	13.2
Indirect Taxes*	9.5	11.6	15.6	13.4	9.9	8.2	4.6	4.6	7.1
Total	22.7	26.5	32.4	35.8	34.6	35.0	30.5	44.5	37.1
<u>Counts</u>									
Sample Size (000s)	12.4	1.7	1.6	1.2	1.3	1.3	1.6	0.8	21.9
Estimated Number of Firms (000s)	378.5	43.3	23.4	12.8	4.0	2.6	1.6	0.8	466.8
<u>Percentage Distributions</u>									
Firms	81.1	9.3	5.0	2.7	0.9	0.6	0.3	0.2	100.0
Benchmark Income	11.6	5.6	4.8	6.0	4.0	5.6	11.4	49.7	100.0
Assets	7.5	3.1	3.2	4.8	3.0	4.6	9.3	64.5	100.0
<u>Fixed Asset to Labour</u>									
Cost Ratio (Capital Intensity - %)	80	141	143	132	146	195	199	323	210
<u>Proportions of Firms with</u>									
Positive									
Book Profit After-Tax	61	72	70	74	67	71	72	79	63
Benchmark Income	65	75	74	72	70	74	72	76	67
Income Tax Paid	44	58	58	56	48	49	45	42	46

\* Note that transfers and indirect taxes are both seriously understated.

\*\* Net Assets are total assets less investments in affiliates.

The "inverted U" pattern carries through provincial income taxes, and for total taxes with the exception of the top (over \$100 million in assets) size group. In this latter case, resource taxes impose high effective tax rates (24.8% in the \$100 million plus range), though as we shall see shortly this is an artifact of a very small number of large resource firms.

The bottom of Table 1 shows that fairly similar proportions of firms within each size range are profitable from both the shareholder (book profit after tax) and the benchmark/economic perspectives. The largest firms are most often profitable from shareholder's perspective. However, there is a sharp difference in the proportions which are taxable. In fact, the largest firms are the least likely to pay any income tax. A point to which we shall return later is that capital intensity increases quite strongly in relation to size.

Figures 1 and 2 extend the results in Table 1 by showing the dispersion of ETRs within each of the asset size ranges, where Figure 1 shows ETRs for federal income taxes net of transfers (i.e. corresponding to the first row in Table 1) and Figure 2 shows ETRs for total net taxes from the shareholder's perspective excluding only provisions for deferred tax (i.e. the "Total" row in Table 1). Generally, these micro level results corroborate the overall results: ETRs follow an "inverted U" pattern. Figure 2 in particular shows that even when resource taxes are included, at least up to the 90th percentile of firms there is still a generally "inverted U" shaped pattern of ETRs. Thus, the very high effective tax rate in Table 1 applies to only a very small fraction of the largest firms.

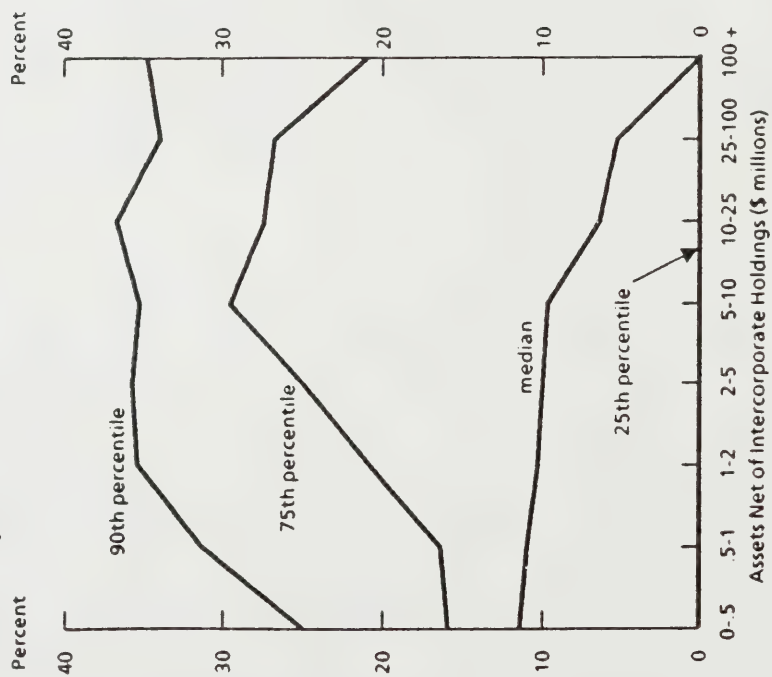
As a further elaboration of the "inverted U" pattern of ETRs overall, Table 2 presents ETRs by net asset size range and broad industry group. Generally, the same pattern holds within each industry group with the exception of energy, wholesale trade and services, where the largest size group of firms pays relatively higher taxes. In the other seven industry groups, the firms in the top size range pay relatively less tax than firms in the next smaller size range. However, the patterns by firm size within each broad industry group tend to be more "jagged" than the pattern for all industries combined.

#### Major Tax Provisions Affecting Corporate Concentration

We turn now to consider a number of specific provisions of the income tax system. The basic question is whether any particular tax provisions can be



**Figure 1**  
Federal Income Taxes Net of Transfers, Effective  
Tax Rates by Size, 1983



**Figure 2**  
Total Federal and Provincial Taxes Net of Transfers,  
Effective Tax Rates by Size, 1983

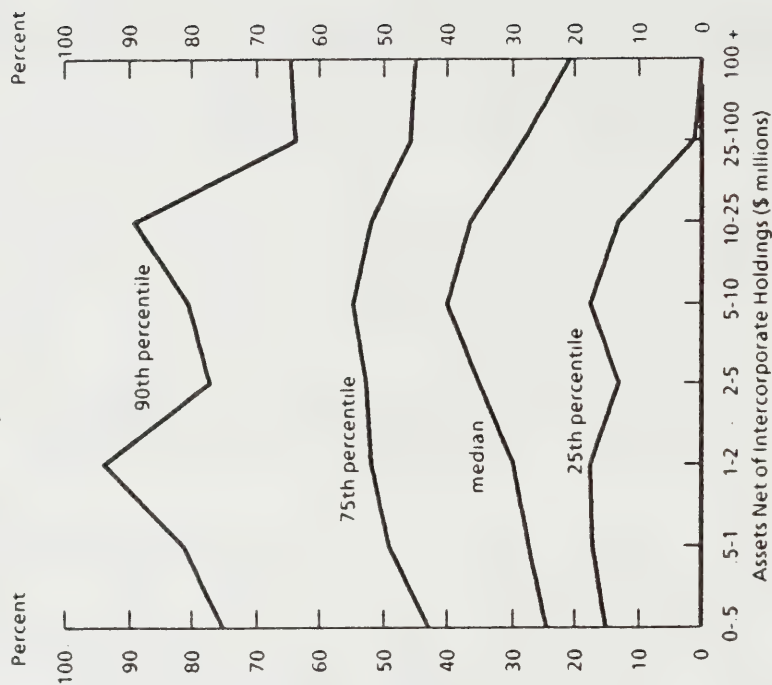


TABLE 2: Federal Corporate Taxes less Transfers, Effective Tax Rates (%), 1983

Broad Industry	Net Asset Size Range (\$ millions)								All Firms
	0-.5	.5-1	1-2	2-5	5-10	10-25	25-100	>100	
Agriculture, Forestry and Fishing	-8.4	-1.9	4.0	6.1	6.1	12.1	6.6	-	-1.7
Mining	9.6	10.2	13.2	12.7	14.1	14.2	16.0	6.5	9.0
Energy	4.5	2.2	-13.2	26.4	10.4	7.9	6.4	8.8	8.7
Manufacturing	5.1	2.5	4.3	15.7	19.4	19.5	18.1	10.8	13.2
Construction	9.8	13.9	14.0	11.6	27.9	14.4	23.1	20.3	14.1
Transportation	8.7	11.0	13.2	8.1	19.9	21.0	15.0	7.2	9.0
Wholesale	11.6	13.0	12.3	20.2	16.2	21.4	22.1	27.7	17.8
Retail	11.3	10.1	12.1	14.1	15.7	18.7	21.6	13.4	13.3
Finance	14.3	17.9	17.7	16.3	12.3	10.6	7.6	6.7	11.4
Services	8.2	10.9	12.8	21.3	7.8	23.9	20.5	27.1	15.1
All Industries	9.7	11.1	11.9	16.5	15.3	17.1	15.4	9.6	11.5

identified that account for the overall patterns of ETRs. Table 3 shows the impact on effective tax rates of the major provisions. The figures show the hypothetical change in effective tax rate that would result if the particular provision were removed. In the case of exploration and development expenses and depletion claims, and depreciation claims, the alternative assumption is that only book amounts would be claimable. Equivalently, Table 3 expresses the values of the tax provisions as a percentage of benchmark income. (Wolfson (1987) provides more detailed data as well as a complete description of the methodology.)

Losses for Tax Purposes One might expect that larger firms with multiple product lines, different geographical markets or more diversified customers would be more likely to have profitable segments of the business against which to offset losses in other segments. In turn, this would imply both that tax losses for large firms are less likely to arise and also that if they do, they are more likely to be carried back or utilized in the following tax year.

Table 3 indicates that there was some variation in the current year tax loss experience by size of firms, but no clear patterns.

Tax Incentives and Capital Intensity The tax system contains a number of provisions that provide incentives for capital investments. These include the investment tax credit, the Scientific Research Tax Credit (SRTC), the two-year write-off of manufacturing and processing machinery and equipment other accelerated depreciation classes, and the overall generosity of the capital cost allowance system. As is evident from Table 3, both tax depreciation in excess of book depreciation and the investment and scientific research tax credits are biased towards larger firms.

This pattern can be explained by the fact that larger firms are on average relatively more capital intensive than small firms (recall Table 1). This might be anticipated both because of the nature of the industries in which they operate and because of the type of production processes adopted. In other words, general incentives directed toward capital investment will lower the effective tax rates of larger firms on average more than for smaller sized firms, and thus tend to contribute to corporate concentration.

Resource Sector In terms of effective tax rates the resource sector provisions - fast write-offs of exploration and development expenses and the additional earned depletion deduction - are clearly biased toward larger firms.



TABLE 3: Values of Selected Federal Corporate Income in Terms of Effective Tax Rates (%), 1983

Tax Provision	Net Asset Size Range (\$ millions)								All Firms
	0-.5	.5-1	1-2	2-5	5-10	10-25	25-100	>100	
Tax Losses									
Current Year	7.5	7.6	7.2	9.4	8.8	9.4	9.8	6.1	7.3
Current Year Carried Back	2.1	1.8	1.8	1.5	2.3	1.5	1.1	0.6	1.1
Prior Year Applied	3.0	2.4	2.7	4.9	3.7	3.5	4.5	3.1	3.4
Accelerated Depreciation	-1.6	-1.9	-2.6	-1.9	-1.8	-0.4	1.5	4.0	1.5
Investment Tax Credits	0.5	0.8	1.2	1.1	1.3	1.5	1.7	2.2	1.6
SRTC	-	-	-	-	0.1	0.6	0.6	1.8	1.0
Resource Exploration and Development	-	-	-	0.6	0.6	0.5	0.2	3.3	1.8
Inventory Valuation Adjustment	1.0	1.4	2.1	2.4	2.1	2.1	2.0	1.3	1.5
Small Business Dedn.	14.2	13.0	9.1	3.6	0.6	0.2	-	-	3.3
Manufacturing and Processing Dedn.	0.6	0.9	0.8	1.1	1.3	1.5	1.5	0.8	0.9

\* i.e. the value of the tax provision as a percentage of benchmark income.

Inventory Valuation Adjustment The 3 percent inventory deduction tended to be relatively most important for medium-sized firms. This provision has been abolished. It provided partial relief for the impact of inflation in creating purely nominal gains from holding inventory.

Small Business The small business deduction (a misnomer since it is actually a tax credit) is by far the most important tax provision related either directly or indirectly to firm size. Its impact on effective tax rates is so great that if it were eliminated, effective tax rates would decline almost monotonically when moving up the asset size ranges.

Manufacturing and Processing The "manufacturing and processing deduction" (again actually a tax credit) is somewhat more beneficial to medium to large as opposed to small and very large sized corporations.

Figure 3 provides a graphic summary of these data on the relative impact by size of firm of some of the tax provisions shown in Table 3. The bottom and darkest portion of the bars in the graph shows the actual average ETR within each size range. Here, the pattern is the inverted "U" that has already been noted; medium-size firms on average pay more federal corporate income tax than either smaller- or larger-size firms. Next, the dark plus the shaded portions of the bars show what the average ETRs would have been in the absence of the special low tax rate for small businesses. In this hypothetical situation, ETRs would decline systematically with increasing size. Thus, the special low tax rate for small businesses does generally lower ETRs for smaller firms.

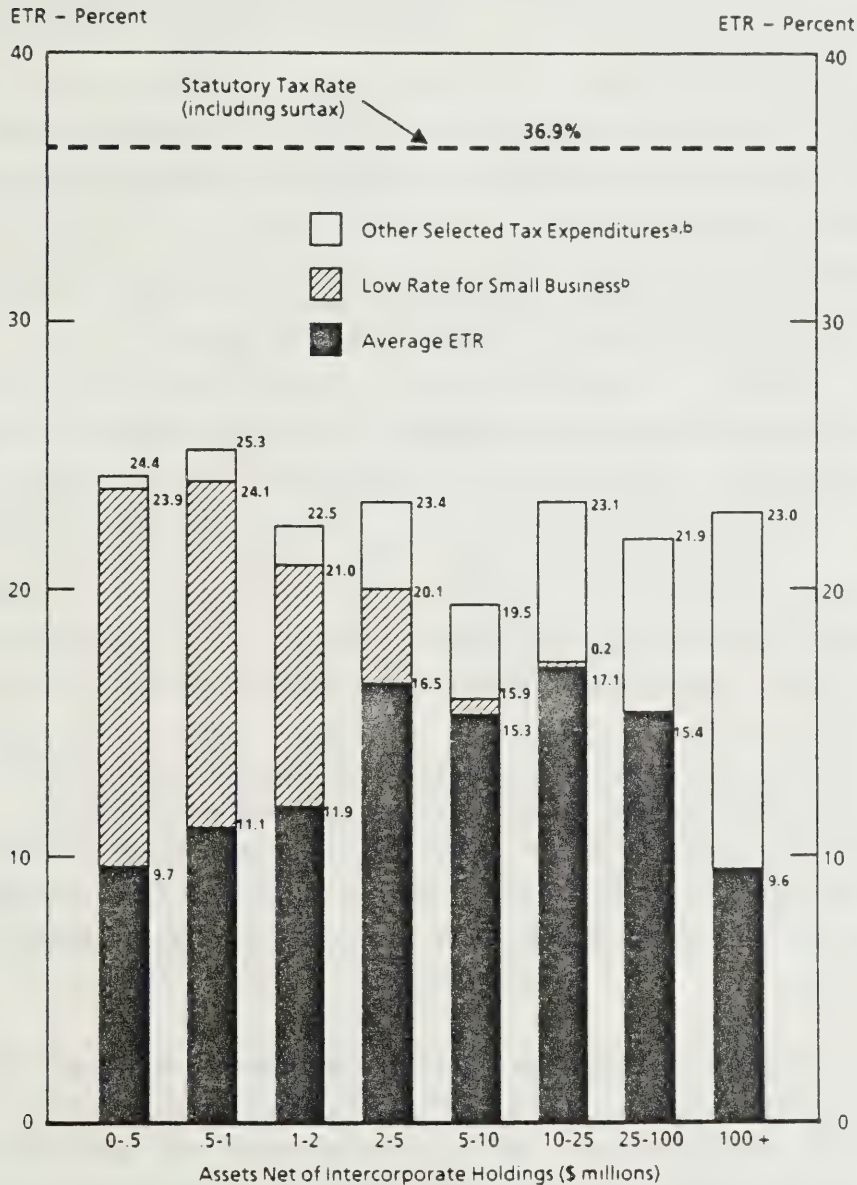
Finally, the unshaded top segment of each bar shows the value of a number of other major tax expenditures expressed in terms of their impact on ETRs. These tax expenditures are mainly incentives for investment. Figure 3 shows that these tax measures tend primarily to benefit the largest corporations. In their absence, and without the special low small business tax rate, this accounting for the values of various major tax expenditure provisions suggests that average ETRs would be roughly flat across size ranges.

### Summary and Conclusions

These notes set out to assess the role of the corporate income tax system in relation to corporate concentration. The analysis started with a brief impressionistic review of the main provisions relating to mergers and take-overs. One provision that has received considerable attention recently is the



**Figure 3**  
Average Federal Effective Corporate Income Tax Rates (ETRs) by  
Net Asset Size and the Impact of Selected Tax Expenditures, 1983



Notes: a. accelerated depreciation, investment tax credit, SRTC, resource exploration and development, inventory valuation adjustment, and low rate for manufacturing and processing.  
b. expressed in terms of percentage point reductions in ETRS.

deductibility of interest expenses on funds borrowed to buy shares in a takeover situation. We have argued, however, that the importance of this provision may well be overstated relative to the provisions allowing capital gains rollovers and flow throughs of losses in corporate reorganizations where there is a change in control.

All three of these groups of provisions can be seen as providing a bias in the corporate income tax system toward mergers and takeovers as compared to a tax system where these provisions were simply absent. However, this is not a conceptually satisfactory alternative. Compared to more conceptually pure but probably academic alternative tax structures, these provisions would not appear to provide very strong incentives to mergers and takeovers.

The main part of the analysis addressed the relationship of the income tax system to variations in profitability by firm size. This is a more fundamental issue because firms' ability to grow, whether externally by mergers and takeovers, or internally by ploughing back after-tax profits, is clearly dependent on their profitability. This in turn depends on firms' effective tax rates. The basic result of the analysis is that, leaving aside the special low tax rate for small businesses, there is a general pattern of effective tax rates that decline with corporate size. Thus, it could be argued that the corporate income tax system is generally structured so that larger firms are able to grow relatively faster than medium- and small-sized firms as compared to a benchmark tax system that is neutral. With these dynamic properties, the tax system can be said to be biased toward corporate concentration, a conclusion contrary to that reached by the Royal Commission on Corporate Concentration (1976).

More specifically, the main group of provisions that account for this bias relates to capital intensity. Large firms tend to be more capital intensive, and a significant proportion of the tax provisions that lower effective tax rates are tax expenditures providing incentives for investment, both in capital equipment and structures (accelerated depreciation and the investment tax credit) and in resource exploration and development.

#### Post Script - The Tax Reform White Paper

On June 18, 1987, the Minister of Finance tabled a White Paper on tax reform. Several proposals for reform of the corporate income tax are germane to the analysis here:



- o lowering the statutory corporate tax rate;
- o cutting back on accelerated depreciation, writeoffs in the resource sector, and investment tax credits;
- o increasing the proportion of capital gains income to be included in income for tax purposes;
- o introduction of special additional taxes on dividends on term preferred shares; and
- o introduction of a general anti-avoidance rule.

The new taxes on intercorporate dividends arising from term preferred shares, which came into effect on June 18, 1987, are apparently intended to curtail the effective movement of tax losses between corporations. To the extent that this objective is met, there could be more pressure on takeovers as a means of utilizing banks of tax losses whose carryforward would otherwise run into the seven year limit. The increased relative taxation of capital gains could place similar increased pressure on the use of the capital gains rollover provisions. On the other hand, the proposed general anti-avoidance rule, with its particular reference to step transactions (a sequence of transactions each of which is legal where the ultimate effect is that no tax liability is incurred), could well inhibit takeover transactions where a significant aspect is tax loss flow-throughs or capital gains rollovers.

The reduced incentives for investment (accelerated depreciation, resource sector provisions, and investment tax credits) would probably tend to mitigate the results above showing lower ETR's among the largest firms. The impact of the general lowering of the statutory tax rate is not clear. The value of the small business deduction would be increased both absolutely and relatively (from 11% against 36% to 12% against 28%).

The analysis presented in the White Paper shows corporations paying effective tax at a rate of 18.7% (Table 4.9) compared to our figure of 11.5% in 1983. However, the White Paper does not specify which year(s) the data are from, while it does indicate that the concept of benchmark income excludes capital gains income, income used to pay provincial resource royalties, and foreign source income eligible for foreign tax credits.

The White Paper concludes that small firms face lower effective tax rates than large firms (Table 4.10). This result is not inconsistent with our analysis because the White Paper definition of large firms generally corresponds to the top four or five size ranges in our analysis.





## Annex 1 - Data Sources

The primary sources of data for this analysis is a sample of about 20,000 corporate income tax returns for the year 1983. This is exactly the same sample that underlies the annual Statistics Canada publications Corporation Financial Statistics and Corporation Taxation Statistics (Catalogue Numbers 61-207 and 61-208). These publications are in turn recommended as valuable sources of background information.

Of the over one-half million corporations that file corporate income tax returns each year, specially designed samples stratified by industry and asset size were drawn. While the sample size overall is about 5% of the corporate universe, all large corporations are included so that the sampled firms account for over four-fifths of total assets and almost two-thirds of taxable income. For each sampled firm, a standard set of information was transcribed from their tax return, the accompanying tax schedules and audited financial statements.

In this analysis, the data from the sampled firms were used directly and blown up to represent the corporate universe. This is different from the method of estimation used in the annual Corporate Financial and Taxation Statistics series, so estimates of comparable items presented here differ slightly from already published figures. (The estimation process used in this analysis is described in greater detail in Wolfson (1987).)

Another caveat is that some items as transcribed from corporations' financial statements appear seriously understated. This is particularly the case for direct transfers received from governments (grants and subventions) and local property and provincial capital taxes. This is probably the result of firms not showing these items explicitly on their financial statements. For example, if a firm is investing in a new machine costing \$100, and it receives a \$20 grant from the government to subsidize the purchase of this machine, the firm may simply show on its books that it bought a machine for \$80. While this understatement is clearly serious, the judgement in this analysis is that the topics of study are sufficiently important to warrant the use of imperfect data, given that the reader has been appropriately cautioned.

## Annex 2 - Basic Concepts

The main empirical measure used in this analysis is the effective tax rate (ETR). This is simply the ratio of taxes paid to income. In general, the numerator of any individual firm's effective income tax rate is well defined - corporate income (or other) tax actually paid. The denominator, however, is more problematic. At a conceptual level, the objective is a comprehensive measure of economic income, the Haig-Simons definition in the economics literature more popularly translated as "a buck is a buck is a buck" by the Carter Royal Commission on Taxation (1966).

Recently, the most significant application of this concept is in the Government of Canada Tax Expenditure Account first published by the Minister of Finance in 1979 and subsequently updated in 1980 and 1985 (hereinafter referred to as the T.E. Account). The T.E. Account is premised on a benchmark or normative tax structure. This structure is the statutory income tax rate times economic income. Tax expenditures are then defined as differences or deviations from this norm or benchmark. In this analysis of effective corporate tax rates (ETRs), it is useful to build on the conceptual base of the existing T.E. Account, including the definition of economic income.

There are several major premises involved in defining benchmark income. To begin, both this analysis and the T.E. Account accept the classical view that corporations are separate entities in their own right capable of paying tax. An alternative view is that corporations are merely intermediaries acting on behalf of their shareholders, and should thus be seen as extensions of their ultimate individual owners. This latter view implies a benchmark income tax system in which corporate and personal income taxes are fully integrated, and this was in fact one of the major recommendations of the Carter Royal Commission. This view was not adopted in the T.E. Account essentially on pragmatic grounds, since the existing income tax more closely reflects the classical view.

From the viewpoint of corporate concentration, it is also important to note that the basic entity being analysed is the legal corporation, which we have also been referring to loosely as a firm. The legal corporation, however, is increasingly irrelevant as the basic unit when thinking about businesses and the way they behave. Businesses, especially large ones, tend to consist of groups of corporations. Furthermore, the substantive role of individual corporations within a related group may be primarily determined by considera-

tions of tax planning, limited liability, or regulations. Notwithstanding these important caveats, the available data are those for legal entities, and this should be borne in mind when interpreting the results of the analysis.

We turn now to a more detailed development of the concepts of benchmark or economic income and benchmark tax, and the method for allocating differences between benchmark tax and actual taxes paid to specific tax provisions. Essentially this involves three different concepts of a corporation's income. The first is book profit after tax as per the corporations' financial statements - income from the shareholders' perspective. This is the starting point for the calculation of both actual and benchmark corporate tax. The second income concept is taxable income as per the Income Tax Act, from which federal Part I corporate income tax payable is determined (the predominant corporate tax under the Income Tax Act); and the third is benchmark or economic income.

Table A shows the various relationships using 1983 data for the corporate universe (excluding crown and non-profit private corporations). The calculations for both actual tax and benchmark tax as defined for purposes of this analysis start from the same point - income from the shareholders' perspectives, book profit after tax. In 1983 this amounted to \$26.4 billion. In both cases, the first major step is to move to book profit before tax by adding back the \$11.5 billion shown on financial statements as provisions for income taxes (including deferred taxes), \$4.7 billion of provincial resource royalties, and \$2 billion of other taxes. The benchmark calculation goes beyond this by also adding back the \$3.6 billion of reported "indirect" taxes - local property taxes and provincial capital taxes. The fact that these indirect taxes are allowed as a tax deductible expense in computing federal corporate income tax means in effect that the federal government shares their cost with corporations' shareholders.

Both calculations also deduct \$10.6 billion of intercorporate dividend receipts from pre-tax book profit. In the actual tax calculation, this is to avoid double taxation - the corporate source income underlying these dividends has already gone through the corporate income tax system. Similarly, in the derivation of benchmark income, the exclusion of intercorporate dividends serves to avoid double counting corporate source income.

From this point on, the two calculations diverge. On the one hand, the benchmark tax structure deducts transfers (grants and subventions) that have



TABLE A: Corporate Tax - The Basic Accounting Framework

Overview of Actual & Benchmark Federal Corporate Income Tax Calculations,  
Federal Perspective, 1983

Procedure	Financial or Tax Variable	Actual Tax Calculation	Benchmark Tax Calculation
Start With	SHAREHOLDER'S INCOME:		
	Book Profit After Tax (As Per Company Financial Statement)	26,389	26,389
Add Back	Provisions for Income Tax (Including Provincial & Deferred)	11,481	11,481
	Provincial Resource Royalties	4,711	4,711
	Indirect Taxes (Local Property and Prov. Capital)		3,589
	Other Taxes (PGRT/IORT, Prov. Mining & Logging)	1,963	1,963
Equals	Book Profit Before Tax	44,544	48,132
Add Back	Charitable Donations Made	252	252
Deduct	Exempt Dividends Received	10,613	10,613
	Transfers Received (per P/L)		825
	Excess of Tax Deductions Over Amounts Used in Computing Book Profit (eg. Accelerated Depreciation)	8,893	
Equals	Current Year Income (Taxable or Benchmark)	25,290	36,946
Add Back	Current Year Losses (ie. Negative Amounts of Current Year Income, Firm by Firm)	(10,088)	(13,802)
Deduct	Prior Year Losses Carried Forward and Applied	4,613	
Equals	TAXABLE INCOME/ Economic or BENCHMARK INCOME	30,765	50,748
Times	Statutory Federal Tax Rate (46%)		
Equals	Tax Otherwise Payable	14,152	
Less	Provincial Abatement (10% of Taxable Income)	3,077	
Times	1 plus Surtax Rate (2.5%)		
Equals	Basic Federal Tax	11,352	
Or Times	Benchmark Tax Rate (a)		
Equals	Benchmark Tax		18,726
Less	Other Tax Credits Also Claimable Against Surtax (SBD, M&P times 1.025)	2,127	
	Further Tax Credits (eg. Investment, SRTC)	1,614	
Equals	FEDERAL PART I TAX PAYABLE	7,612	18,726
Less	Transfers Received per P/L & Capitalized (b)	1,142	
	Refundable Tax Credits	54	
	Value of Current Year Tax Losses Carried Back (c)	570	
Equals	Net Federal Income Taxes Less Transfers Received	5,845	18,726

Notes: a. Benchmark rate equals  $(46\% - 10\%) \times (1 + 2.5\%)$  or (statutory rate less provincial abatement) times one plus surtax rate.

b. Seriously under-reported.

c. Actual losses carried back times benchmark tax rate.

been included in book income. This is to define benchmark income as "pre-government" income.

On the other hand, the actual, but not the benchmark, tax calculation deducts \$8.9 billion that is largely attributable to tax expenditures such as accelerated write-offs. The result is current year aggregate taxable income of \$25.3 billion. But this is not really the corporate tax base. First, this \$25.3 billion figure includes or is net of \$10.1 billion of negative taxable income or 1983 tax losses. Such negative taxable income does not give rise to negative taxes; rather it is ignored in the current year's tax calculation, though it can be carried forward or back for a limited number of years to offset positive taxable income in those other years. Thus, the \$25.3 billion figure is actually made up of \$35.4 billion of current year positive taxable incomes which did form part of the 1983 corporate income tax base, and \$10.1 billion of negative 1983 taxable incomes which will to the extent possible be used to offset the respective firms' positive taxable incomes in other years.

In fact, Table A shows that \$4.6 billion of prior year losses (negative taxable incomes in years prior to 1983) was applied against the \$35.4 billion of current year positive taxable income to result in \$30.8 billion in final taxable income for 1983. As well \$1.5 billion of 1983 tax losses were carried back and applied retroactively to offset prior years' taxable income and resulted in federal income tax refunds of about \$0.6 billion (see next to last line).

The calculation of final taxable income taking account of tax losses reflects two fundamental aspects of Canada's (and most countries') corporate income tax system. First, it is asymmetric with respect to positive and negative incomes (i.e. profits and losses). Positive incomes give rise to positive tax liabilities, while negative incomes do not give rise to negative taxes or refunds, at least not directly. Second, however, and indirectly through the loss carryforward and carryback provisions, negative taxable incomes do give rise to reductions in tax wherever there would have been tax potentially payable.

These loss provisions thus result in a muddy picture of partial tax asymmetry where loss carrybacks in particular can give rise to an immediate refund of previously paid corporate tax. As stated in the T.E. Account (1985, page 18), "the income tax treatment of losses under the benchmark tax structure raises some fundamental conceptual questions. ... the present loss carry-

forward and carryback provisions do not provide for complete neutrality among taxpayers ..." Precisely because of this non-neutrality, the Economic Council of Canada (1987) has recommended that the income tax system be reformed to make the treatment of losses closer to symmetric. On the other hand, Tom Wilson has suggested that a more asymmetric treatment of tax losses would be preferred if the objective is to reward success rather than effort (in Mintz and Purvis (1985). More to the point, the inability to use available tax losses may be an important factor in corporate takeover activity, a recent possible example being Amoco's takeover of Dome Petroleum.

For purposes of this analysis, pure asymmetry is assumed in the definition of the benchmark tax structure - all negative amounts of benchmark income are ignored in computing benchmark tax payable. Thus, the benchmark system is taken to be like the actual tax system without loss carryforwards or carry-backs. Thus, the \$13.8 billions current year negative benchmark income (i.e. benchmark losses) is added back under the pure asymmetry assumption to get the benchmark tax base for 1983 of \$50.7 billion.

It should be emphasized that this benchmark tax base is still an approximation to the intended concept of positive, pre-tax, pre-transfer corporate economic income. The reason is that the data are drawn from corporations' financial statements which in turn reflect generally accepted accounting principles, or "GAAP". GAAP may diverge from economic concepts. For example, book depreciation claims may reflect the application of rules of thumb that are not accurate measures of real wear and tear or economic obsolescence of physical plant and equipment. Small firms, for example, tend to use the prescribed corporate income tax capital cost allowance (CCA) rates for their book, as well as for their tax calculations of depreciation (see Supplementary Budget Paper D, Minister of Finance, 1976). As a result, tax incentives in this case will be understated. In the resource sector, there is considerable variability in the way firms can and do write off exploration expenditures. More fundamentally, charges such as depreciation are computed on an historical rather than a current or replacement cost basis. In general there is nothing that can be done in this analysis about divergences between GAAP and economic concepts. (Figures based on inflation accounting adjustments are presented in Wolfson (1987).)

Given taxable income as prescribed in the Income Tax Act and benchmark income as defined for purposes of this analysis, the next step in both calculations is to apply a tax rate to calculate tax otherwise payable. In the actual



tax calculation, this takes place in several steps. First, the statutory corporate tax rate of 46% is applied resulting in \$14.2 billion in "tax otherwise payable". Then there is a "provincial abatement" of 10% of taxable income amounting to a tax reduction of \$3.1 billion. In effect, the 46% statutory federal corporate income tax rate is something of a fiction; the operative federal rate is 36%, since over 98% of all taxable income in Canada is earned in a province and thus is eligible for the provincial abatement. The provincial abatement is a reflection of this historical evolution of federal-provincial fiscal relations, whereby the federal government has abandoned ten percentage points of corporate income tax "room" in order that the provinces can levy their own corporate income taxes. Finally, as a temporary measure, a 2.5% surtax applied in 1983, resulting in \$11.4 billion in "Basic Federal Tax".

For purposes of this analysis, the statutory federal rate, the surtax, and the provincial abatement are treated jointly in defining the benchmark tax structure - the benchmark tax rate is defined as 36.9% = the statutory rate of 46% less the 10% provincial abatement all times one plus the 2.5% surtax rate. The result of applying this rate to economic or benchmark income, as shown in the second column of Table A, is \$18.7 billion of benchmark tax. This is the end of the story in defining the norm or benchmark which serves as the reference point for this analysis of the corporate tax/transfer system.

As already noted, this definition of the benchmark tax system is largely the same as that adopted for purposes of the Department of Finance's T.E. Account. There are three main differences:

- benchmark income is taken to be "pre-government" income before the receipt of transfers and subsidies, and before the payment of indirect taxes;
- the statutory tax rate is taken to be after the provincial abatement so that transfers of tax points to the provinces are not considered to be tax expenditures in the analysis; and
- the loss carryforward and carryback provisions are not included in the benchmark system here whereas in the T.E. Account they are.

Thus, the tax provisions to be highlighted in this analysis particularly in the area of losses are broader than those officially defined as tax expenditures.

Even though we have completed the derivation of benchmark tax, there are several more steps to the calculations in the actual system. After the calculation of "Basic Federal Tax", taxpayers are able to claim a variety of

tax credits. Two of the largest of these, the Small Business and Manufacturing and Processing Profits Deduction (SBD and M & P respectively, where "deduction" is an unfortunate misnomer) are claimable against tax payable before the application of the surtax, and were thus worth an extra 2.5%, for a total value of \$2.1 billion. The other tax credits were worth \$1.6 billion resulting in Part I corporate income tax payable of \$7.6 billion.

But the story is still not quite complete. Firms received transfer payments directly from governments, as reported on their financial statements, of \$1.1 billion. (These transfers include \$825 million included in book profit which was subtracted in computing benchmark income. The balance of these transfers were capitalized and hence included on balance sheets but not in income. Note that these grants and subventions, as well as the figures for indirect taxes, appear to be seriously understated.)

Finally, corporations were able to use \$1.5 billion of the \$10.1 billion in current year tax losses to get immediate tax refunds by carrying back the losses and retroactively applying them against prior years' positive taxable incomes. Using the benchmark tax rate as the basis for valuing these new found deductions (and for simplicity ignoring the change in the surtax rate), these loss carrybacks were worth \$570 million in tax refunds.

Given the assumption that transfers received by private corporations are 100% federal, the proverbial "bottom line" is net federal income taxes paid less transfers received by corporations of \$5.8 billion. This amounts to just under one-third of benchmark tax, and an average effective tax rate (ETR) of 11.5% of the \$50.7 billion in positive economic or benchmark income. It is this ETR - federal corporate income taxes less transfers (grants and subventions) - that is the principal focus of the analysis above.

A broader ETR concept will also be used sometimes. This is federal plus provincial income taxes plus federal and provincial resource taxes (PGRT, IORT, provincial royalties, mining and logging taxes) plus indirect taxes less transfers received. This adds \$13.0 billion to the \$5.8 billion of net federal income taxes paid and results in an overall federal plus provincial income plus other tax ETR of 37.1%.

Thus, it is important to bear in mind that the federal corporate income tax/transfer system accounted for less than one-third of the net tax burden of corporations. However, since provincial income taxes have essentially the same

structure as federal corporate income taxes, the income tax (less transfers) portion of the overall 37.1% ETR is closer to half.

The relatively low levels of effective tax rates in the corporate income tax compared to statutory rates reinforce the view that the corporate income tax system has become a framework for providing diverse sets of incentives much more than a system for raising revenue.





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